

## WHAT IS CLAIMED IS:

1. A zeolite-containing dispersion, comprising:  
a) a polymer having an acid number of less than about 200; and  
5 b) from about 0.5% to about 10% by weight zeolites containing anti-microbial metal ions, said zeolites having a particle size of between about 2 and about 7 microns, and a pore size of between about 3 and about 5 Angstroms.

10 2. The zeolite-containing dispersion of Claim 1, wherein the anti-microbial metal ions are silver ions.

3. The zeolite-containing dispersion of Claim 1, wherein the dispersion is water-based.

15 4. The zeolite-containing dispersion of Claim 3, wherein the pH is greater than or equal to about 9.

5. The zeolite-containing dispersion of Claim 4, wherein the pH is less than about 9.7.

20 6. The zeolite-containing dispersion of Claim 1, wherein the dispersion is solvent-based.

25 7. The zeolite-containing dispersion of Claim 1, wherein the acid number of said polymer is less than about 80.

8. The zeolite-containing dispersion of Claim 7, wherein the acid number of said polymer is less than about 70.

30 9. The zeolite-containing dispersion of Claim 1, wherein the polymer is an acrylic polymer.

10. The zeolite-containing dispersion of Claim 9, wherein the acrylic polymer is an acrylic emulsion with an acid number of less than about 200.

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11. The zeolite-containing dispersion of Claim 10, wherein the acid number of the acrylic polymer is from about 45 to about 192.

12. The zeolite-containing dispersion of Claim 10, wherein the acrylic polymer in the acrylic emulsion has an acid number of 64 or 55.

13. The zeolite-containing dispersion of Claim 6, wherein the polymer is nitrocellulose.

14. The zeolite-containing dispersion Claim 1, wherein the viscosity of the dispersion is between about 10 and about 400 centipoise at 10 -25 °C.

15. The zeolite-containing dispersion Claim 1, wherein the viscosity of the dispersion is between about 200 and about 300 centipoise at 10 -25 °C.

16. The zeolite-containing dispersion of Claim 1, wherein the zeolites comprise from about 1% to about 5% by weight of the dispersion.

17. The zeolite-containing dispersion of Claim 1, wherein the zeolites comprise from about 2% to about 5% by weight of the dispersion.

18. The zeolite-containing dispersion of Claim 1, wherein the zeolites have a particle size of from about 4 to about 6 microns, and a pore size of at least about 4 Angstroms.

19. A method of applying an anti-microbial treatment to a surface of a packaging material, comprising:

- a) providing a dispersion of Claim 1;
- b) printing said dispersion onto said surface of said packaging material, and
- c) drying said dispersion to form a dried coating layer on at least a portion the packaging material surface.

20. The method of Claim 19, wherein the dried coating layer is hydrophobic.

21. The method of Claim 19, wherein the dispersion is printed in a discontinuous pattern over the surface of the packaging material.

22. The method of Claim 19, wherein the printing is rotogravure printing.

23. The method of Claim 19, wherein the printing is silk screen, offset gravure,  
5 flexographic or lithographic printing.

24. The method of Claim 19, wherein the printed dispersion coating layer has a  
thickness of from about 1 micron to about 12 microns.

10 25. The method of Claim 24, wherein the dried dispersion coating layer has a  
thickness of from about 2 microns to about 8 microns.

26. The method of Claim 19, wherein said packaging material is a polymer film.

15 27. The method of Claim 19, wherein said packaging material is selected from the  
group consisting of cellophanes, vinyl chlorides, vinyl chloride copolymers, cellulose acetate  
films, vinylidene chlorides, vinylidene chloride copolymers, ethyl cellulose, aluminum foils,  
methyl cellulose, laminates, polyesters, papers, polyethylenes, paperboards, polypropylenes,  
glassines, polystyrenes, nylons and combinations thereof.

20 28. A packaging material with anti-microbial properties, made by the method of  
Claim 19.

29. A method of rendering a substrate anti-microbial or otherwise more resistant to  
bacteria, comprising:

- a) providing a dispersion of Claim 1; and
- b) applying said dispersion onto a surface of said substrate.

25 30. The method of Claim 29, wherein said substrate is selected from the group  
consisting of paper, paperboard, nylon films, polyester films and polystyrene films.